

Massachusetts Institute of Technology  
Instrumentation Laboratory  
Cambridge, Massachusetts

LUMINARY Memo #53

TO: Dan Lickly  
FROM: George W. Cherry  
DATE: November 12, 1968  
SUBJECT: Final LUMINARY Tree-Shaking

New Assembly Required

We will need to make at least one more LUMINARY Assembly (Revision 63) to repair presently known problems. If you or anyone else knows of a problem which has to be fixed, please come forth immediately. We will have a meeting tomorrow at 8:30 AM before the FACI review begins to discuss the final assembly. The following people should submit the new cards and modification forms to fix the noted problems or discrepancies. The changes should be submitted to Craig Schulenberg today or (no later, please!) by 8:30 AM tomorrow morning.

Problem	Individual Responsible
1. P20 (Navigation) scaling.  The computed variance for a range rate measurement is zero at close ranges and the improved measurement incorporation routine uses the optimistically weighted measurement.	Pete Volante
2. R21 Kepler takes too long when base state vector is old. (Add precision update to beginning of R21.)	Pete Volante

<u>Problem</u>	<u>Individual Responsible</u>
3. GYRO Compensation can be lost for 163.84 seconds or 81.92 seconds if gyro compensation finds someone in IMUSTALL (such as V40 N20 or R47 zeroing the IMU CDU's).	Jim Kernan
4. R04 and R77 operator error logic.	Jim Kernan
5. Allan Klumpp's DPS engine constants. (Requires an approved PCR.)	Allan Klumpp
6. Use unshared erasables for back-up optics LOS Noun, N87.	Don Millard
7. APS Minimum impulse data. There is an error in the GSOP and a small error in the program.	Craig Schulenberg (Craig, please write the PCN for the GSOP.)
8. FINDCDUW gain change. Bill has found an undesirable guidance-control interaction during CSM-docked burns.	Dr. William Widnall
9. Closing of guidance loop in P12. Vertical rate is larger than desired (50 fps) during initial part of P12 due to sampling data and inertia of LM. Requires PCR initiated and approved by MSC.	Larry Berman

More Testing Required

1. Some PCR's implemented recently have not been tested. (Example, change to CDH time computation, PCR 254).
2. Some Level 3's and Level 4's have not been run on the lastest revision.
3. Could we think up any special tests for the hybrid or all-digital which could increase our confidence?
4. Have any of the FACI review groups a suggestion for a run which it would be valuable to run now?